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ABSTRACT

Teaching methods have been developed and tested that encourage students to process information and refine their thinking skills. The information processing model is known as the Integrative Teaching Model. By combining the computer technology in the HyperCard application for data display and retrieval, instructional delivery of this teaching model can be enhanced. Improved focus and attention of students are definite advantages gained when instructors use a hypermedia graphic organizer for the lesson's content. The instructor can also appreciate the subsequent data modification capabilities that HyperCard affords and the easy material storage of charts, maps, or graphs. For example, HyperCard can enhance a lesson plan on the interpretation of bar graphs and the conclusions that can be drawn from the information in bar graphs, by providing examples of such graphs and computer graphics of the sources the data are taken from. (7 references) (DB)

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An Instructional Merger: HyperCard and the Integrative Teaching Model

by

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Running Head: HyperCard/Integrative

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Abstract

Computer technology, HyperCard, can be used to enhance instruction. This hypermedia application becomes an integral part of the teacher's lesson presentation when it is used for the data display in the Integrative Model of teaching. Advantages of using HyperCard for the graphic display, the model's phases, and a reasoning skills lesson will be included in this paper.

As computer programs become more powerful and available to teachers, educators who feel comfortable experimenting with computer applications will discover ever increasing ways of using computer technology to complement instruction. One such application will be described in this paper.

Using interactive teaching with technology and certain teaching strategies can raise students' critical thinking skills. One of the major criticisms made of our educational system has been the low level of thinking that teachers have required from students. Too frequently, our classroom requirements have not extended beyond memorization and recall of facts and/or figures. This mere accumulation of descriptive knowledge does not prepare our students to critically interpret data.

Some instructional strategies have been developed and tested during the past few decades which encourage students to process information. Using these information processing teaching strategies has been shown to develop students' thinking skills (Steinberg, 1985; Rosenshine & Stevens, 1986). The information processing teaching model discussed here was first conceptualized by Hilda Taba (1965, 1967) and later described by Eggen and Kauchak (1988) as the Integrative Model. Eggen and Kauchak's model includes five phases which combine inductive and deductive skills with content. This model has a graphic display which organizes the lesson's content.

The hypermedia application, HyperCard, can be used in conjunction with the Integrative Teaching Model to improve the Integrative Model's data displays. Revealing only that data the teacher wants students to respond to can increase on-task behavior during the lesson.

This paper will cover several facets of this application. Advantages of using a HyperCard stack with the model will be explored. The phases of the Integrative Model will be defined in a lesson plan which will lead the reader through the model and the instructional merger of the HyperCard application.

DATA RETRIEVAL

The data displays presented by Eggen and Kauchak (1988) include charts, maps, and graphs. The first step of the Integrative Model has students describe the information on sections of a map, graph, or matrix. If hypermedia is not used, students see the entire data display. This can prevent students from focusing exclusively on the data being discussed and can cause distinct problems for attention deficit children.

Some teachers have tried to solve this problem by putting the data on the chalkboard as it is being presented. Management

problems can occur when the teacher records the data, and classroom verbal interaction is interrupted. Using the HyperCard application allows the teacher to "click up" information easily as the lesson progresses. Therefore, hypermedia can enhance the Integrative Model's data display and retrieval process.

A HyperCard stack works like transparency overlays for the overhead. Each "card" in the stack can build on the previous layer or cards. When the teacher uses HyperCard to present a matrix, students see only those cells which have been discussed to that point in the lesson. Teachers are assured students can concentrate on the particular data being discussed. The students' attention is not "jumping ahead" to other cells on the chart. HyperCard also has the ability to go directly to any card in the stack that the teacher might choose to discuss next or to review.

HyperCard has the power to increase on-task behavior in another way. The stack can be animated, given sound, and can present material from a variety of sources such as textbooks, magazines, photographs, and records. All of these have the potential to capture the child's attention during the lesson and to make the data more meaningful.

The teacher can prepare the HyperCard stack ahead of time and can store it easily for future use. The storage room needed is minimal, and although the "chart" has been completed, it can be altered easily. This can be a real convenience if the teacher finds other material that could be included; or if after the lesson is taught once, the teacher finds it would be better to change the display.

A final reason to teach the Integrative Model with a HyperCard application concerns the possibilities for reinforcement. After the lesson is finished, the teacher has the option of making a copy of the disk with additional directions or information that students can use independently for review of the concept. This independently used disk could also be beneficial for students who were absent during the classroom presentation. The following sample lesson plan will demonstrate how teachers can use the Integrative Model with a Macintosh HyperCard stack.

READING AND USING GRAPHS

Grade level: 3-5
Reasoning Skills
Period: 30-40 minutes

Objectives:

The students will be able to interpret a bar graph.

Students will be able to compare different data presented on the graph and will be able to explain those comparisons.

Students will be able to make reasonable hypotheses from the information given on the graph.

Students will be able to make content generalizations about the graph's data.

Materials:

1. HyperCard on the Mac SE
2. Screen, data projection pad, and overhead projector
3. Reference: PC Globe Disc
4. Reference: Eggen, P. & Kauchak, D. (1988). STRATEGIES FOR TEACHERS: TEACHING CONTENT AND THINKING SKILLS, 2nd ed. Englewood Cliffs, N.J.: Prentice-Hall, Inc.

Procedures:

Pre-computer Activity:

Anticipatory Set. "How old do you think you will live to be? (Call on a few students for responses.) There are records kept on how old people are when they die. They can use these records in a country to give an average for how long men or women might live in that country. This is called 'life expectancy'."

"Today we will use a graph to look at life expectancies. Can anyone tell me what a graph is?" (Discuss responses.)

Computer Activity/Integrative Teaching Model Merger:

Discuss the title pages, the countries to be covered in this lesson, the lines, and labels on the graph. (The terms baseline, vertical axis, and histogram may be mentioned but interpretation rather than terminology is to be stressed.) After students

understand the basic structure of the graph, move into the model's phases. (See Appendix A for stack printout.)

Integrative Model Phases

Phase 1: Describe

In this first phase, students are asked to describe one bar on the graph, USA Male Life Expectancy. (Questions might be: "What country does this bar represent? What does this bar mean?") Add the second bar by clicking the mouse. Have students describe the Russian bar. At this point the teacher can either move to the third bar (China) or can progress to Phase 2.

Phase 2: Compare

After at least two bars have been added to the display, students are asked compare the exposed bars. (Questions might be: "What do you see that is alike about all of these countries? What do you notice about the life expectancy for men in the USA as compared to men's life expectancy in Russia?")

Phase 3: Explain

Students then explain/justify their answer (e.g. "In all three countries the men live to be at least sixty because all those bars go to at least the 60 point on the baseline. The men in the USA live longer because the bar graph shows a longer time in years.") The teacher would then repeat these three phases as additional country bars are added to the graph.

The teacher would what famine is. Food shortages and lack of medical care in certain countries could be discussed. The term "third world countries" might be included in the lesson.

The bar for Ethiopia would be shown next. The students should Describe this additional data. Then students can be asked to Compare/Contrast all the data to this point in the lesson and to Explain their reasoning.

Phase 4: Hypothesize

During this phase, the teacher can raise some hypothetical questions that students should be able to give reasonable answers to based on the previous information in the lesson. "Why do you think the life expectancy for men in Ethiopia is so very short? What might happen if food and medical care were easily obtained?

If people in the United States had a famine, what might happen to the men's life expectancy?"

Phase 5: Generalize

Students will make generalizations that summarize what they have learned in the lesson (e.g. "Men in Ethiopia and India die younger than do men in countries with more food. Food shortages can cause countries to have shorter life expectancies.")

These phases can then be repeated for the Female Life Expectancy graphs and again for the graphs that compare male/female life expectancies, Life Expectancy. As students advance through the hypermedia stack, their generalizations should become strengthened.

Post-Computer Activity:

Closure. "Today we have learned about life expectancy in different countries for men and women. To understand the information, we read a bar graph." Either restate the class's generalizations here or make a statement like, "We learned that people live longer in countries that have enough food and better medical care. We found that women in the countries we studied lived as long as or longer than men."

Evaluation:

Students will be informally evaluated on their ability to read the information on the bar graph and to contribute to class discussion. The teacher will make annotations in a plan book about any children who need a tutorial session on the computer using this disc to reading bar graphs.

Lesson Extensions.

(1) Students might be asked to find bar graphs in newspapers or magazines. They could interpret the information and write a paragraph which summarizes it.

(2) The class could construct bar graphs. Students could work in groups to collect data and sketch out their histogram. Then each group could use the Tools to make a card with their information on HyperCard. The class would take turns interpreting each group's histogram.

SUMMARY

The Integrative Model of instruction can help develop students' thinking skills as they process information. By using the HyperCard application for the data display and retrieval, computer technology can enhance the instructional delivery of this teaching model. Improved focus and attention of students during the data retrieval part of the lesson are definite advantages gained when instructors use a hypermedia graphic organizer for the lesson's content. The teacher can also appreciate the subsequent data modification capabilities that HyperCard affords and the easy material storage of the charts, maps, or graphs.

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READING AND USING
GRAPHS



CONTENTS

1. TEACHING TIPS
2. MALE GRAPH
3. FEMALE GRAPH
4. COMPARISON GRAPH



THIS STACK CAN BE USED
WITH THE INTEGRATIVE
MODEL OF TEACHING



THE INTEGRATIVE
MODEL HAS FIVE
PHASES



1. DESCRIBE
2. COMPARE/CONTRAST
3. EXPLAIN
4. HYPOTHESIZE
5. GENERALIZE



WE WILL BE LOOKING AT
FIVE COUNTRIES:

1. THE UNITED STATES OF
AMERICA (USA)

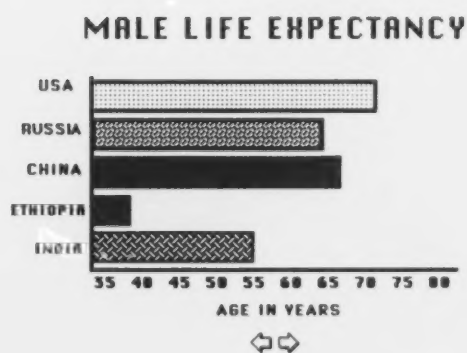
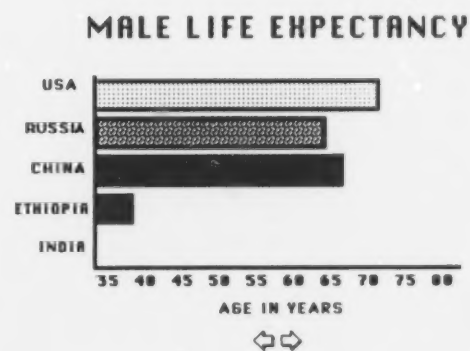
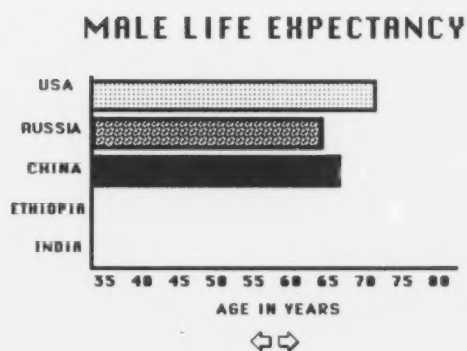
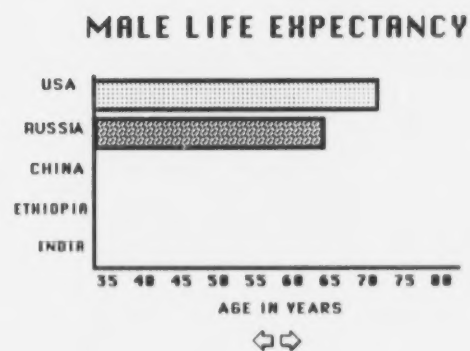
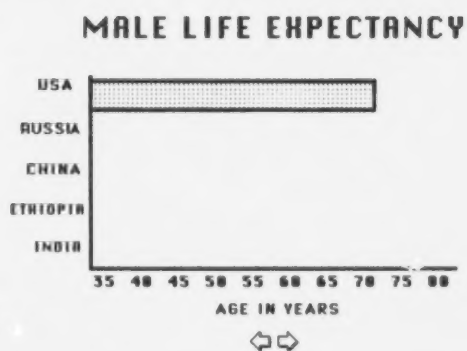
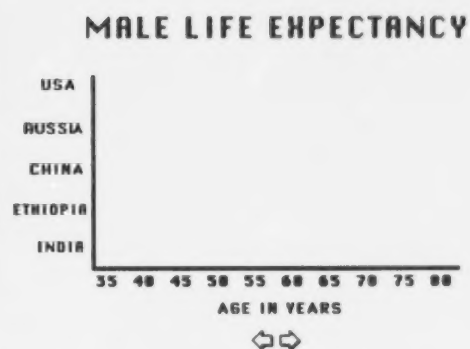
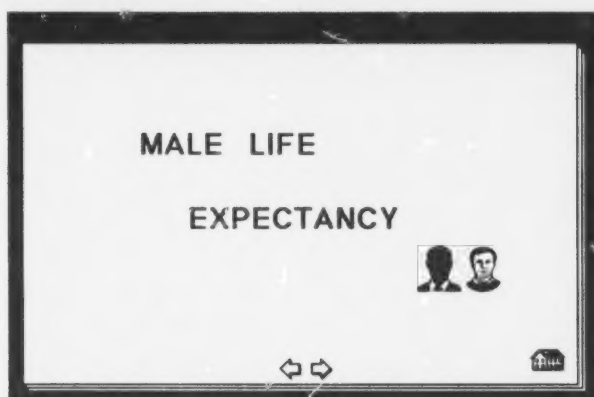


2. RUSSIA
3. CHINA



4. ETHIOPIA
5. INDIA





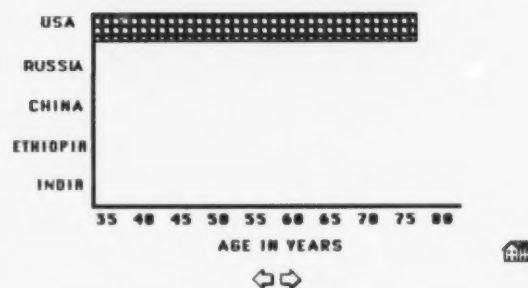
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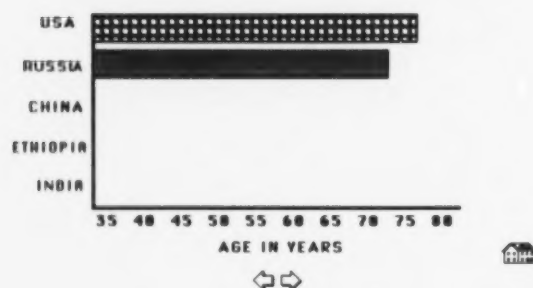
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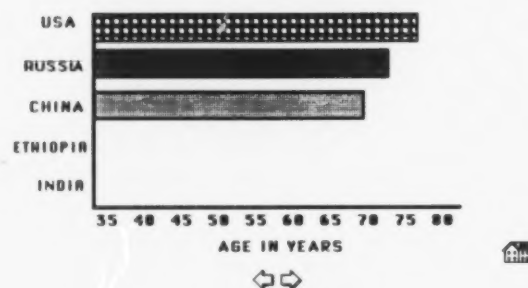
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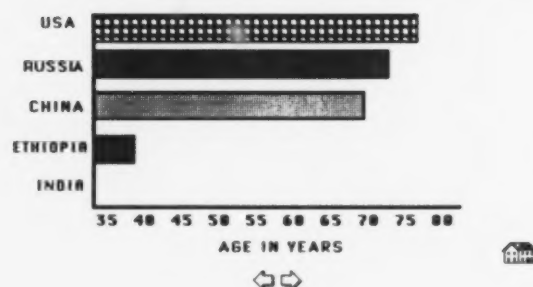
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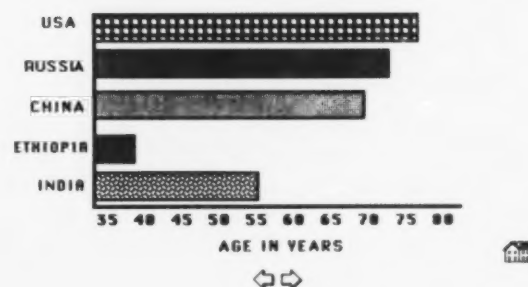
FEMALE LIFE EXPECTANCY



FEMALE LIFE EXPECTANCY

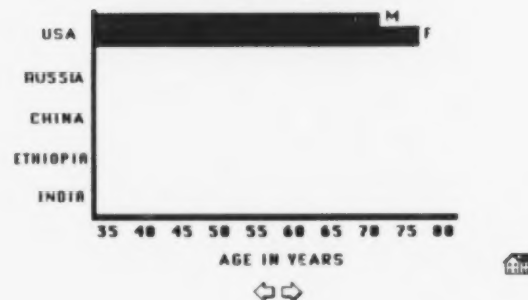


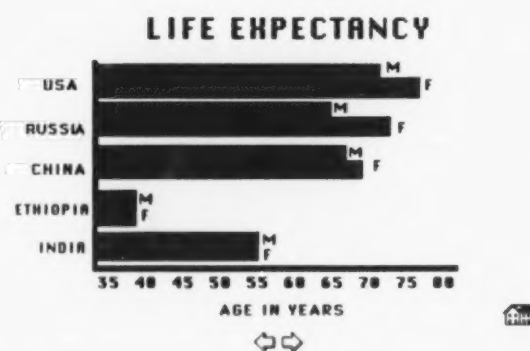
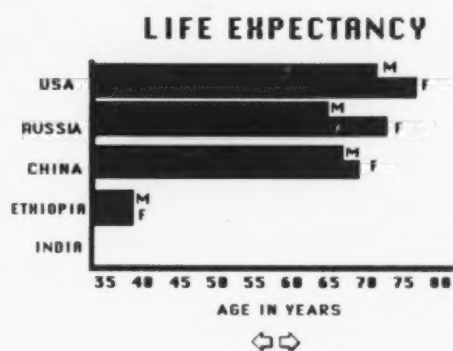
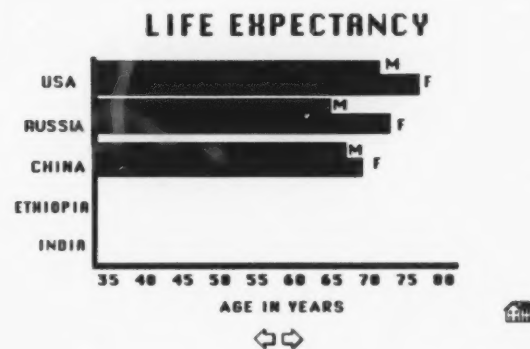
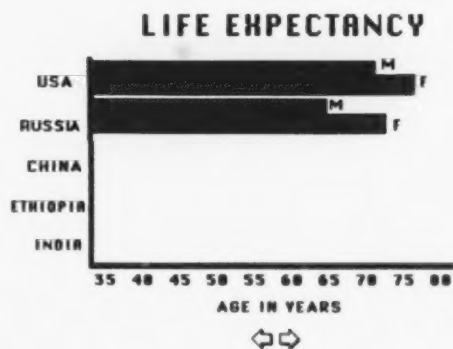
FEMALE LIFE EXPECTANCY



LOOKING AT MALE AND
FEMALE LIFE EXPECTANCY
FOR EACH COUNTRY

LIFE EXPECTANCY





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